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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Customer No.	23643	
Group:	3622	
Confirmation No.:	9299	
Application No.:	09/618,615	
Invention:	NEURAL NETWORKS FOR INGRESS MONITORING	**<u>FILED ELECTRONICALLY MAY 6, 2008</u>**
Inventor:	Gary W. Sinde	
Filed:	July 18, 2000	
Attorney Docket:	6573-62441	
Examiner:	Donald L. Champagne	

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal brief is submitted in furtherance of the notice of appeal submitted March 7, 2008 and in response to the Official Action dated November 9, 2007. **The $250.00 fee for filing this appeal brief was submitted with the appeal brief submitted July 23, 2007**. Should any additional fees be required to constitute this a timely appeal brief, the Commissioner is hereby authorized to charge any such fees, or credit any overpayment, to Deposit Account No. 10-0435, with reference to Appellant's undersigned counsel's file 6573-62441.

Real Party In Interest

The real party in interest is Trilithic, Inc., by virtue of assignments recorded July 20, 1999 in the records of the Patent and Trademark Office on patent record reel 010117, beginning at frame 0458 and July 18, 2000 in the records of the Patent and Trademark Office on patent record reel 011127, beginning at frame 0826.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 1-40, all of the claims remaining in this application, are rejected. The rejections of all of claims 1-40 are appealed. Claims 41-124 have been cancelled without prejudice.

Status of Amendments

No amendments were filed subsequent to the rejection from which this appeal is taken.

Summary of Claimed Subject Matter

The invention may best be understood by referring to the following copies of appealed claims 1-40, annotated with parenthetic reference numbers and related notes from the detailed description.

With reference to claim 1, the invention is a method of identifying a source of ingress into a network (cable return path) including storing (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), comparing (page 13, line 10--page 14, line 6) the frequency spectrum of ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), and determining (page 13, line 10--page 14, line 6) from the comparison which of the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress.

With reference to claim 2, the invention is the method of claim 1 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path

distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which of the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 3, the invention is the method of claim 2 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress (CB signal, AM radio, common path distortion) to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 4, the invention is the method of claim 3 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 5, the invention is the method of claim 4 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 6, the invention is the method of claim 1 further including digitizing (page 11, lines 2-10) the frequency spectrum of the ingress.

With reference to claim 7, the invention is the method of claim 6 wherein comparing (page 13, line 10--page 14, line 6) the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line

6) from the comparison which frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 8, the invention is the method of claim 7 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 9, the invention is the method of claim 8 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 10, the invention is the method of claim 9 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 11, the invention is the method of claim 6 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path

distortion) includes digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 12, the invention is the method of claim 11 wherein comparing (page 13, line 10--page 14, line 6) the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which of the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 13, the invention is the method of claim 12 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 14, the invention is the method of claim 13 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 15, the invention is the method of claim 14 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10)

frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 16, the invention is the method of claim 1 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 17, the invention is the method of claim 16 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which thus-digitized (page 11, lines 2-10) frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 18, the invention is the method of claim 17 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 19, the invention is the method of claim 18 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-

digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 20, the invention is the method of claim 19 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 21, the invention is an apparatus (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for identifying a source of ingress into a network (cable return path) including memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) for storing frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress.

With reference to claim 22, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 23, the invention is the apparatus of claim 22 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 24, the invention is the apparatus of claim 23 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel®

spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 25, the invention is the apparatus of claim 24 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) further includes a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together including a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 26, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing (page 11, lines 2-10) the frequency spectrum of the ingress.

With reference to claim 27, the invention is the apparatus of claim 26 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-

based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 28, the invention is the apparatus of claim 27 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 29, the invention is the apparatus of claim 28 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to

the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 30, the invention is the apparatus of claim 29 wherein the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 31, the invention is the apparatus of claim 26 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and the memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) includes a memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) for storing the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 32, the invention is the apparatus of claim 31 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL

INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 33, the invention is the apparatus of claim 32 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 34, the invention is the apparatus of claim 33 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) further includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 35, the invention is the apparatus of claim 34 wherein the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum

solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 36, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and the memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) includes a memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) for storing the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 37, the invention is the apparatus of claim 36 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the stored frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 38, the invention is the apparatus of claim 37 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 39, the invention is the apparatus of claim 38 further including a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 40, the invention is the apparatus of claim 39 wherein the neural network (Fig. 6) and the back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

Grounds of Rejection to be Reviewed on Appeal

The grounds of rejection to be reviewed by the Board are:

(1) whether claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 would have been 35 U. S. C. § 103 obvious based upon the combination of Nickolls U. S. Patent 5,251,626 (hereinafter Nickolls) and a declaration (hereinafter the Champagne declaration) by the Examiner concerning his participation as an employee of General Electric in a project to identify the source of vibrations in a General Electric model MS 7001B gas

turbine-driven power plant; and,

(2) whether claims 5, 10, 15, 20, 25, 30, 35 and 40 would have been 35 U. S. C. § 103 based upon the combination of Nickolls, the Champagne declaration and Eberhart U. S. Patent 6,516,309 (hereinafter Eberhart). Although the Examiner does not indicate that the Champagne declaration forms a part of the rejection of claims 5, 10, 15, 20, 25, 30, 35 and 40, these claims depend from claims which are rejected based in part upon the Champagne declaration. Accordingly, Appellant has assumed the Examiner's reliance upon the Champagne declaration for these rejections as well.

Argument

I. Nickolls, the Champagne Declaration and 35 U. S. C. § 103

The Examiner rejected claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 under 35 U. S. C. § 103. The Examiner relied upon Nickolls and the Champagne declaration to support this rejection. The Examiner takes the position that Nickolls

> teaches [ ] a method and apparatus for identifying arrhythmias (abnormal heart rhythms) by monitoring physiological signals (col. 6 lines 5-14) descriptive of heart activity (col. 9 lines 47-48), which reads on identifying a source of abnormality within an electrical network, including classifying electrocardiogram (ECG) waveforms (col. 5 lines 48-54), which reads on storing frequency spectra of known arrhythmias/abnormalities (col. 7 lines 3-8 and Figs. 7-9), comparing the input ECG spectra with the spectra of known arrhythmias/abnormalities, and determining from the comparison which of the frequency spectra of known arrhythmias is closest to the input ECG spectra (col. 11 lines 28-38 and Figs. 4 and 5, described at col. 12 line 11 to col. 13 line 65).

The Examiner continues:

> Nickolls [ ] does not teach that the abnormality is <u>an ingress</u> into (external to) a network. However, for the following reasons, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply the teachings of Nicholls (sic) [ ] to identifying an abnormality that is an ingress into a network.
>
> [ ] First, the problems of the instant and reference inventions are analogous. Both inventions comprise storing frequency spectra of known sources of ingress/abnormality, comparing the frequency spectrum of the unknown ingress/abnormality signal to the frequency spectra of known sources of ingress/abnormality, and determining from the comparison which of the frequency spectra of known sources of ingress/abnormality is closest to the frequency spectrum of the

unknown ingress/abnormality. The two inventions differ only in that the instant invention identifies an ingress/abnormality that is eternal (sic -- external) to a network while the reference invention identifies an arrhythmia/abnormality that is internal to the heart network. The two inventions are concerned with identifying unknown spectra and do so in the same way, by comparison to known spectra.

[ ] Second, one of ordinary skill in the art is a graduate engineer familiar with the use of spectral analyzers and related instruments. Such a person is skilled in applying mathematical analogies to diverse problems as well as in analyzing spectra. The application of Nicholls [ ] to the instant problem of identifying an unknown spectrum and therefore its source outside of a network is well within the skill of an ordinary practitioner of the engineering art.

[The Champagne declaration] is being filed herewith attesting that the examiner has himself applied these principles to identify a source of ingress into a gas turbine power plant. Note from [the Champagne declaration] that no meaningful distinction was made between (ingress) sources external to the power plant and sources internal to the power plant. Either external (ingress) or internal sources could have caused the problem. The team of which the examiner was a member investigated both external (ingress) and internal sources simultaneously. One of ordinary skill in the art would not regard the distinction between external (ingress) and internal sources as meaningful. The fact that the reference invention identifies internal spectra would not have dissuaded one of ordinary skill in the art from applying the reference invention to the identification of external (ingress) spectra.

[ ] The courts have held that a reference may be used to reject a claim if the reference is 'reasonably pertinent to the particular problem with which the inventor was concerned' (MPEP § 2104.01(a)). Here Nicholls [ ] is applicable because the particular problem is the same, identification of an unknown spectrum.

[ ] The US Supreme Court has ruled,

'When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.' (*KSR International Co. v. Teleflex, Inc.*, 550 U.S. ___, 82 USPQ2d 1358 (2007).

> The reference invention compares an unknown spectrum within the human heart to known spectra so as to identify the unknown spectrum. While the instant invention is not in the same field, it is a predictable variant of the reference invention, and therefore, under KSR, barred from patentability by 35 USC § 103. Using the technique of the reference invention is further obvious because comparing an unknown spectrum to known spectra so as to identify the unknown spectrum is not beyond the skill of an ordinary practitioner of engineering.

The November 9, 2007 rejection, page 2, line 27-page 4, line 27.

A. Nickolls is Non-Analogous; the Champagne Declaration is Non-Analogous

Dealing sequentially with the Examiner's arguments, contrary to the Examiner's first assertion, Nickolls's efforts to identify types of heart arrhythmias are non-analogous, and thus incapable of being relied upon to reject Appellant's claims under 35 U. S. C. § 103. Assuming that the Champagne declaration describes something that can be considered prior art (an assumption Appellant strenuously disputes, for reasons which will be discussed hereinafter), the Champagne declaration's attempt to find the source of noise affecting a gas turbine engine is non-analogous, and thus incapable of being relied upon to reject Appellant's claims under 35 U. S. C. § 103.

In In re Clay, 966 F.2d 656, 23 USPQ2d 1058, for example, the Court observed that

> Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved (citing In re Deminski, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986); In re Wood, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979)). Clay at 1060.

In Clay, the issue was whether a reference (Sydansk) which disclosed a process using a gel for reducing the permeability of hydrocarbon-bearing formations (useful in the recovery of oil from an oil field, for example) was analogous art to Clay's claimed process for using a similar gel to fill a dead volume in the bottom of a liquid hydrocarbon storage tank. Clay, supra. The Court observed that

> Sydansk cannot be considered to be within Clay's field of endeavor merely because both relate to the petroleum industry. Sydansk teaches the use of a gel in unconfined and irregular volumes within generally underground natural oil-bearing

> formations to channel flow in a desired direction; Clay teaches the introduction of gel to the confined dead volume of a man-made storage tank. The Sydansk process operates in extreme conditions, with petroleum formation temperatures as high as 115°C and at significant well bore pressures; Clay's process apparently operates at ambient temperature and atmospheric pressure. Clay's field of endeavor is the storage of refined liquid hydrocarbons. The field of endeavor of Sydansk's invention, on the other hand, is the extraction of crude petroleum. The Board clearly erred in considering Sydansk to be within the same field of endeavor as Clay's. Clay, supra., emphasis the Court's.

The Court noted that

> Even though the art disclosed in Sydansk is not within Clay's field of endeavor, the reference may still properly be combined with Hetherington [another reference] if it is reasonably pertinent to the problem Clay attempts to solve. In re Wood, 599 F.2d at 1036, 202 USPQ at 174. A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Clay at 1060-61.

The Court analyzed Sydansk's pertinence to the problem Clay was trying to solve, observing that

> Sydansk's gel treatment of underground formations functions to fill anomalies so as to improve flow profiles and sweep efficiencies of injection and production fluids through a formation, while Clay's gel functions to displace liquid product from the dead volume of a storage tank. Clay at 1061, footnote omitted,

and concluded that

> A person having ordinary skill in the art would not reasonably have expected to solve the problem of dead volume in tanks for storing refined petroleum by considering a reference dealing with plugging underground formation anomalies. The Board's finding to the contrary is clearly erroneous. Since Sydansk is non-analogous art, the rejection over Hetherington in view of Sydansk cannot be sustained. Clay, supra.

In Wang Laboratories Inc. v. Toshiba Corp, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993), the court held that, even though a prior patent and the subject patents all relate to the same computer memories, they are not in the same field of endeavor, because the prior patent "involves memory circuits in which modules of varying sizes may be added or replaced; in contrast, the subject patents teach compact modular memories." Wang

Laboratories, Inc., 993 F.2d at 864. The court further held that the prior art was not reasonably pertinent because the subject patents dealt with memories used in personal computers whereas the prior art dealt with a memory circuit for a large, more costly industrial controllers. *Id.* at 864-865. The court concluded that the subject patents were non-analogous to the prior art patent. Id.

As in the court's discussion in Wang Laboratories, Inc., because the present invention on the one hand, and Nickolls and the Champagne declaration on the other hand, are not in the same field of endeavor, and because Nickolls and the Champagne declaration are not reasonably pertinent to the present invention, Nickolls and the Champagne declaration are non-analogous to the present invention. Therefore it would not have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Nickolls and the Champagne declaration to the identification of ingress noise into a network.

In In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992), the Court reversed the Board's reasoning and held that the Board erred in finding that "all hooking problems are analogous." Id. at 1445 The Court noted that

> [i]n order to rely on a reference as a basis for rejection of the applicant's invention, the reference must either be in the field of the applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. See In re Deminski, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986). Patent examination is necessarily conducted by hindsight, with complete knowledge of the applicant's invention, and the courts have recognized the subjective aspects of determining whether an inventor would reasonably be motivated to go to the field in which the examiner found the reference, in order to solve the problem confronting the inventor. We have reminded ourselves and the PTO that it is necessary to consider "the reality of the circumstances," In re Wood, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979) - in other words, common sense - in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.
>
> It has not been shown that a person of ordinary skill, seeking to solve a problem of fastening a hose clamp, would reasonably be expected or motivated to look to fasteners for garments. The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a prima facie case of obviousness.

* * *

> We conclude that the references on which the Board relied were improperly combined. Accordingly, the Board erred in holding the claims unpatentable under section 103. The rejection of claims 1-4 and 16-21 is REVERSED.

Oetiker at 1445-46. (emphasis added)

The problems to which the present invention is directed and the problems to which Nickolls and the Champagne declaration are directed are not analogous. As stated by the Patton Law Practice, HeartInfo.Org, the Mayo Clinic, St. Luke's-Roosevelt Hospital Center, and various other sources cited below, arrhythmia signals are generated and communicated within the heart, thus implicating no ingress or egress.

> Normally each heartbeat starts in the right atrium. Here, a specialized group of cells called the sinus node, or natural pacemaker, sends an electrical signal. The signal spreads throughout the atria to the area between the atria called the atrioventricular (AV) node.
>
> The AV node connects to a group of special pathways that conduct the signal to the ventricles below. As the signal travels through the heart, the heart contracts. First the atria contract, pumping blood into the ventricles. A fraction of a second later, the ventricles contract, sending blood throughout the body.
>
> An arrhythmia may occur for one of several reasons:
>
> - Instead of beginning in the sinus node, the heartbeat begins in another part of the heart.
> - The sinus node develops an abnormal rate or rhythm.
> - A patient has a heart block.
>
> There are many types of arrhythmias. Arrhythmias are identified by where they occur in the heart (atria or ventricles) and by what happens to the heart's rhythm when they occur.

Patton Law Practice, http://patton.lexipal.com/monograph/128 (last visited Jun. 26, 2007). *See also*: HeartInfo.Org Patient Guide, http://www.heartinfo.org/ms/guides/19/main.html (last visited Jun. 26, 2007); The Arrhythmia Service, http://www.arrhythmia.org/general/whatis/ (last visited Jun. 26, 2007); and, MayoClinic.Com, http://www.mayoclinic.com/health/heart-arrhythmias/DS00290 (last visited Jun. 26, 2007).

Nickolls relates to medical devices which monitor the cardiac state of a patient by sensing the patient's intrinsic rhythm for the presence of arrhythmias and which deliver therapy in the form of electrical energy to cardiac tissue in an attempt to revert ventricular fibrillation (VF) and other detected arrhythmias and restore a normal sinus rhythm to the patient. Nickolls, col. 1, lines 11-17. More particularly, Nickolls describes an apparatus and

method for the detection and treatment of cardiac arrhythmias by the use of a neural network. Nickolls utilizes a neural network for arrhythmia recognition, diagnosis, and therapy control or a warning system to a patient. Nickolls's neural network is a parallel processing system, and is said to have the capability of recognizing VF's and other forms of arrhythmias in real time accurately and with low power consumption. Nickolls's device is said to provide an enhanced complex therapy control and the ability to make diagnostic decisions using incomplete data. Nickolls's device is said to be applicable to all types of heart pacemaker sensing and therapy including bradycardia and rate responsive pacing. Nickolls, col. 1, lines 19-34. The physiological signals in Nickolls are those representative of heart activity in a patient. Nickolls, abstract. The source of the signals in Nickolls is the heart. The source of the signals in Nickolls is thus known. The Nickolls invention would not, in its normal and usual operation, necessarily perform the method claimed in the present invention. Nickolls claims a method of controlling arrhythmias in a patient's heart by acquiring physiological signals from the heart and delivering a corresponding therapy to the heart. The present application claims a method of identifying a source of ingress into a network. This identified source of ingress may be any of a multitude of sources. In Nickolls, all the signals originate in the heart which is being treated. Acquiring physiological signals from a patient's heart is not equivalent to identifying an unknown source of ingress into a network.

The Champagne declaration describes efforts to identify a source of noise which destroyed a gas turbine in a few hours' time. Technical details of these efforts are sparse, but the Champagne declaration tells us that they involved using microphone probes inside the repaired gas turbine, a recorder to record what the microphones picked up and means to analyze the recorded oscillation data into a frequency spectrum. This clearly is not an analogous art to the present claims under the tests outlined in <u>Clay</u>, <u>Wang Laboratories</u>, <u>Oetiker</u> and other cases that opine on analogous art.

B. "Ingress" Does Not Equal "Abnormality"

Next, the Examiner argues that "[b]oth [the invention of Nickolls and the present invention] comprise storing frequency spectra of known sources of *ingress/abnormality*" (emphasis Appellant's). In so arguing, however, the Examiner assumes the result he is trying to reach, namely that a *VF abnormality* and *ingress into a network* are not just analogous, but are the same thing. However, as demonstrated in the above argument (here incorporated by reference), they aren't. Analogizing to <u>Oetiker</u>, *supra.*, all spectrum analysis problems are *not* analogous.

C. There Is No "Ordinary Practitioner of the Engineering Art"

Next the Examiner argues that "The application of Nicholls [ ] to the instant problem of identifying an unknown spectrum and therefore its source outside of a network is well within the skill of *an ordinary practitioner of the engineering art*" (emphasis Appellant's). There are, of course, a number of engineering arts -- aeronautical, chemical, civil, electrical and mechanical, to name but a few. Appellant seriously doubts that a principle from, for example, chemical engineering could be adopted with the facility the Examiner has here suggested to, for example, electrical engineering. More to the point, the Examiner has not established that a result from heart monitoring or analysis of failure modes of gas turbines could be adopted in network maintenance with the facility the Examiner has suggested. This is another example of the Examiner assuming the result he advocates and then using his assumption to argue that his position is the correct one.

D. If There Is An "Ordinary Practitioner of the Engineering Art," The Examiner Is Not One

As noted above, Appellant doubts seriously whether there is such a thing as an "ordinary practitioner of the engineering art." But further, the Champagne declaration is headed "Declaration of Donald L. Champagne, P.E., Ph.D." The Examiner's *curriculum vitae* in paragraph 1 of the Champagne declaration notes that the Examiner is "a graduate engineer [,] awarded a B. S. degree in mechanical engineering from the University of Rhode Island [,] an M. S. degree in chemical engineering from Rensselaer Polytechnic Institute [, and is] registered as a Professional Engineer in the State of Ohio . . .." Additionally, and as noted above, the title of the Champagne declaration indicates that the Examiner holds a Ph.D. The Examiner doesn't indicate the area of study of his Ph.D., but nonetheless, Appellant is reasonably certain that the *person of ordinary skill in the art to which the invention pertains does not hold a B. S. in engineering, an M. S. in engineering, a Ph.D. in some discipline and a professional engineer's license.* The rejection and the Champagne declaration hold Appellant to a standard not the standard of ordinary skill in the pertinent art, contrary to the express provisions of 35 U. S. C. § 103.

E. Mistaken Premises of, and Mistaken Conclusions from, the Champagne Declaration

Next, the Examiner states the following, which Appellant again quotes in full (with apologies to the Board):

> "[The Champagne declaration] is being filed herewith attesting that the examiner has himself applied these principles to identify a source of ingress into a gas turbine power plant. Note from [the Champagne declaration] that no meaningful distinction was made between (ingress) sources external to the power plant and sources internal to the power plant. Either external (ingress) or internal sources could have caused the problem. The team of which the examiner was a member investigated both external (ingress) and internal sources simultaneously. One of ordinary skill in the art would not regard the distinction between external (ingress) and internal sources as meaningful. The fact that the reference invention identifies internal spectra would not have dissuaded one of ordinary skill in the art from applying the reference invention to the identification of external (ingress) spectra."

1. The Examiner states "[The Champagne declaration] is being filed herewith attesting that the examiner has himself applied these principles to identify a source of ingress into a gas turbine power plant," and "[t]he team of which the examiner was a member investigated both external (ingress) and internal sources simultaneously." With no disrespect meant, *Appellant doubts that the Examiner applied the principles of either Nickolls or the present invention in an effort to determine a source of ingress noise into a turbine.* For one thing, Nickolls issued seventeen years or so after the activities reported in the Champagne declaration. The present application was filed twenty-four years or so after the activities reported in the Champagne declaration. Apparently, in all that time, no "ordinary practitioner of the engineering art," nor even any extraordinary practitioner of the engineering art, recognized that the principles described in the Champagne declaration could be applied to Nickolls or the present invention. This is certainly evidence of the nonobviousness of the present claims.

Further, Appellant's undersigned counsel has been around a few working gas turbines, and Appellant's undersigned counsel suspects that, *assuming there is any noise ingress into a working gas turbine (an assumption which Appellant strenuously disputes, owing at least in part to the high pressure levels inside working gas turbines), such noise is completely swamped to the point of being undetectable over the noise generated by the gas turbine itself.* And, this suspicion appears to be substantiated by the Champagne declaration's own conclusion that "*[i]t was ultimately determined that the source of the damaging 86 Hz oscillation was the gas body within the main cylindrical combustion chamber [of the gas turbine] itself.*" Paragraph 7 of the Champagne declaration, emphasis Appellant's.

2. Next, the Examiner argues, "[n]ote from [the Champagne

declaration] that no meaningful distinction was made between (ingress) sources external to the power plant and sources internal to the power plant." Of course not. *Why would the Examiner make a distinction, meaningful or otherwise, in the Examiner's own self-serving declaration between ingress of noise from sources external to the gas turbine power plant and sources of noise internal to the gas turbine power plant, knowing that to do so would defeat the purpose of the Champagne declaration?* Here again the Examiner is assuming the result the Examiner wants the Champagne declaration to support and then writing the Champagne declaration to support it.

3. Next, the Examiner argues that "[t]he fact that [Nickolls] identifies internal spectra would not have dissuaded one of ordinary skill in the art from applying [Nickolls] to the identification of external (ingress) spectra." The Examiner cites no evidence supporting this proposition beyond the Champagne declaration. There certainly is no support for this proposition in Nickolls, Eberhart or anywhere else in the art of record, as nearly as Appellant could determine. Certainly, no support has been identified by the Examiner. Only the Champagne declaration, with all of its infirmities identified herein, supports this proposition.

4. Next, while Appellant suspects that the Examiner may have submitted the Champagne declaration in an effort to establish some level of skill in some art (which, by the way, Appellant has already argued is non-analogous both to Nickolls and to the art to which the present claims relate), *none of the activities that the Champagne declaration alleges took place has been demonstrated or even alleged* to fall within any of the categories set forth in 35 U. S. C. § 102. That is, *none of the activities that the Champagne declaration alleges took place has been demonstrated or even alleged to even be prior art.* Just as an example, it is certainly possible that the activities described in the Champagne declaration could be or embody trade secrets of General Electric, things only General Electric knew about, tested for, etc. *It is certainly plausible that no other manufacturer of gas turbine power plants ever thought that noise ingress into a working gas turbine would be a cause of turbine failure. It is not beyond reason that the McPherson, Kansas General Electric team described in the Champagne declaration may be the only effort ever to seek a source of noise ingress into an operating gas turbine.* Indeed, the Champagne declaration may be evidence of nothing more than a violation of some jurisdiction's trade secret law.

F. The Examiner Draws the Wrong Conclusions from the Application of *KSR*

The Examiner next quotes from *KSR*, arguing that "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one." The Examiner has presented no evidence tending to establish that the "work [to which the present claims relate] is available in one field of endeavor," or to establish the existence of any "design incentives and other market forces" of any nature in this case, let alone "design incentives and other market forces [tending to] prompt variations of it, either in the [ ] field [of discriminating among different types of ventricular fibrillation or of identifying sources of noise in a working gas turbine] or [in the field of identifying sources of ingress noise into a network]."

The quoted passage from *KSR* also provides that "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." However, *the present method for identifying a source of ingress into a network is not in any way similar to Nickolls's apparatus and method for the detection and treatment of cardiac arrhythmias or to the Champagne declaration's efforts to identify a source of noise in a working gas turbine.*

G. Again, Nickolls and the Champagne Declaration are Non-Analogous

Next, the Examiner asserts that "[w]hile the instant invention is not in the same field, it is a predictable variant of the reference invention, and therefore, under KSR, barred from patentability by 35 USC § 103." The Examiner is certainly correct that "the instant invention is not in the same field" as Nickolls. Appellant adds that it is clearly not in the same field as the Champagne declaration. For all the reasons noted above, however, the Examiner is not correct that the present invention is "a predictable variant of [Nickolls or the Champagne declaration]."

II. Claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 Are Patentable Over Nickolls and the Champagne Declaration

Nowhere does either Nickolls or the Champagne declaration or any 35 U. S. C. § 103 obvious combination of them disclose or suggest claim 1's specifically recited

> "identifying *a source of ingress into a network* including
> storing *frequency spectra of known sources of ingress*,

comparing the *frequency spectrum of ingress to the frequency spectra of known sources of ingress*, and *determining* from the comparison *which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress*"

(italics Appellant's). The italicized elements of claim 1 are neither disclosed nor suggested by any reading of Nickolls or the Champagne declaration or any 35 U. S. C. § 103 obvious combination of them. Claim 1 is allowable at least on this basis.

Claim 2 depends from claim 1 and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> *comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress together include* finding an optimum solution *to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 2 (italics Appellant's). Claim 2 is allowable on this basis as well.

Claim 3 depends from claim 2, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> *finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes* teaching a neural network *the frequency spectra of known sources of ingress*

as specifically recited in claim 3 (italics Appellant's). Claim 3 is allowable on this basis as well.

Claim 4 depends from claim 3, which depends from claim 2, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the frequency spectra of known sources of ingress include*s using a back propagation neural network to find an optimum solution *to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 4 (italics Appellant's). Claim 4 is allowable on this basis as

well.

Claim 6 depends from claim 1 and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests *digitizing the frequency spectrum of the ingress*, as specifically recited in claim 6 (italics Appellant's). Claim 6 is allowable on this basis as well.

Claim 7 depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> *comparing the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the thus-digitized frequency spectrum of the ingress together include* finding an optimum solution *to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 7 (italics Appellant's). Claim 7 is allowable on this basis as well.

Claim 8 depends from claim 7, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> finding an optimum solution *to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes* teaching a neural network *the frequency spectra of known sources of ingress*

as specifically recited in claim 8 (italics Appellant's). Claim 8 is allowable on this basis as well.

Claim 9 depends from claim 8, which depends from claim 7, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> finding an optimum solution *to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes* using a back propagation neural network to find an optimum solution *to the problem of comparison of the thus-digitized frequency*

> *spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 9 (italics Appellant's). Claim 9 is allowable on this basis as well.

Claim 11 depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> *comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress*

as specifically recited in claim 11 (italics Appellant's). Claim 11 is allowable on this basis as well.

Claim 12 depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> *comparing the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and* determining from the comparison *which of the thus-digitized frequency spectra of known sources of ingress is closest to the thus-digitized frequency spectrum of the ingress together include* finding an optimum solution to the problem of comparison *of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 12 (italics Appellant's). Claim 12 is allowable on this basis as well.

Claim 13 depends from claim 12, which depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes* teaching a neural network *the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 13 (italics Appellant's). Claim 13 is allowable on this basis as well.

Claim 14 depends from claim 13, which depends from claim 12, which

depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes* using a back propagation neural network to find an optimum solution *to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 14 (italics Appellant's). Claim 14 is allowable on this basis as well.

Claim 16 depends from claim 1 and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> *comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress*

as specifically recited in claim 16 (italics Appellant's). Claim 16 is allowable on this basis as well.

Claim 17 depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> *comparing the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which thus-digitized frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress together include* finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 17 (italics Appellant's). Claim 17 is allowable on this basis as well.

Claim 18 depends from claim 17, which depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized*

> *frequency spectra of known sources of ingress includes* teaching a neural network *the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 18 (italics Appellant's). Claim 18 is allowable on this basis as well.

Claim 19 depends from claim 18, which depends from claim 17, which depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includes using a back propagation neural network to find an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 19 (italics Appellant's). Claim 19 is allowable on this basis as well.

Nowhere does Nickolls disclose or suggest claim 21's specifically recited

> memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress (italics Appellant's).

Claim 22 depends from claim 21 and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> the device includes a device for finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 22 (italics Appellant's). Claim 22 is allowable on this basis as well.

Claim 23 depends from claim 22, which depends from claim 21, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> the device includes a neural network, *the device teaching the neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 23 (italics Appellant's). Claim 23 is allowable on this basis as well.

Claim 24 depends from claim 23, which depends from claim 22, which depends from claim 21, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> the device includes a back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 24 (italics Appellant's). Claim 24 is allowable on this basis as well.

Claim 26 depends from claim 21 and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that *the device includes a device for digitizing the frequency spectrum of the ingress*, as specifically recited in claim 26 (italics Appellant's). Claim 26 is allowable on this basis as well.

Claim 27 depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> the device includes a device for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 27 (italics Appellant's). Claim 27 is allowable on this basis as well.

Claim 28 depends from claim 27, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> the device includes a neural network, *the device teaching the neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 28 (italics Appellant's). Claim 28 is allowable on this basis as well.

Claim 29 depends from claim 28, which depends from claim 27, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis.

Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> the device includes a back propagation neural network for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 29 (italics Appellant's). Claim 29 is allowable on this basis as well.

Claim 31 depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> *the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 31 (italics Appellant's). Claim 31 is allowable on this basis as well.

Claim 32 depends from claim 31, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> the device includes a device for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 32 (italics Appellant's). Claim 32 is allowable on this basis as well.

Claim 33 depends from claim 32, which depends from claim 31, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> the device includes a neural network, *the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 33 (italics Appellant's). Claim 33 is allowable on this basis as well.

Claim 34 depends from claim 33, which depends from claim 32, which

depends from claim 31, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> the device further includes a back propagation neural network for finding an optimum solution to the *problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 34 (italics Appellant's). Claim 34 is allowable on this basis as well.

Claim 36 depends from claim 21, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> *the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 36 (italics Appellant's). Claim 36 is allowable on this basis as well.

Claim 37 depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> the device includes a device for finding an optimum solution to the problem of *comparison of the stored frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 37 (italics Appellant's). Claim 37 is allowable on this basis as well.

Claim 38 depends from claim 37, which depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests that

> the device includes a neural network, *the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 38 (italics Appellant's). Claim 38 is allowable on this basis as well.

Claim 39 depends from claim 38, which depends from claim 37, which

depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, neither Nickolls nor the Champagne declaration nor any 35 U. S. C. § 103 obvious combination of them discloses or suggests a

> back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 39 (italics Appellant's). Claim 39 is allowable on this basis as well.

Because claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34, and 36-39 distinguish patentably from Nickolls, the Champagne declaration, and 35 U. S. C. § 103 obvious combinations of them, the 35 U. S. C. § 103 rejection of claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34, and 36-39 is erroneous. Appellant respectfully requests that such rejection be reversed.

III. Nickolls, the Champagne Declaration, Eberhart and 35 U. S. C. § 103

The Examiner rejected Appellant's claims 5, 10, 15, 20, 25, 30, 35 and 40 under 35 U. S. C. § 103. The Examiner correctly concedes that "Nickolls [ ] does not teach a particle swarm optimizer." However, the Examiner argues, "Eberhart [ ] teaches a particle swarm optimizer. . .. Because Eberhart [ ] teaches that [a particle swarm optimizer] can improve the efficiency of diagnostic neural networks, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to add the teachings of Eberhart [ ] to those of Nickolls [ ]."

A. Nickolls is Non-Analogous; the Champagne Declaration is Non-Analogous

In rejecting Appellant's claims 5, 10, 15, 20, 25, 30, 35 and 40, the Examiner explicitly ignores the Federal Circuit's observation that "[i]t has not been shown that a person of ordinary skill, seeking to solve a problem of fastening a hose clamp [here insert "the problem of determining the source of ingress noise into a network"], would reasonably be expected or motivated to look to fasteners for garments [here insert "techniques for identifying what type of cardiac distress a person is experiencing" and "techniques for determining the source of noise in a working gas turbine"]. The combination of elements from non-analogous sources [Nickolls's pacemaker, the Champagne declaration's gas turbine], in a manner that reconstructs [Appellant's] invention only with the benefit of

hindsight, is insufficient to present a prima facie case of obviousness." Nickolls is non-analogous. The Champagne declaration's gas turbine is non-analogous. The combination of elements from non-analogous sources, in a manner that reconstructs Appellant's invention only with the benefit of hindsight, is insufficient to make a *prima facie* case of obviousness.

The differences between Nickolls and the present invention are discussed above and are incorporated here by reference. Nothing in Nickolls discloses or suggests anything having anything to do with noise at all. Indeed, Nickolls had better not be responding to noise, since to do so presumably would result in the wrong signal being applied to the heart of the patient being treated by the apparatus and method of Nickolls, jeopardizing the heart rhythm of the patient being treated by the apparatus and method of Nickolls.

Nickolls nowhere discusses ingress or egress. And with good reason. Arrhythmia signals are not ingress or egress. Nickolls's signals are ECG signals, albeit abnormal ones. Nickolls is not trying to identify a noise source. The source is the patient's heart. The information received by Nickolls's device is not noise, but electrical signals being generated by the patient's heart. Nickolls examines the heart-generated signals, and compares those signals to known heart distress signals to identify which kind of distress the heart being monitored is experiencing. Nickolls does this in order to apply the appropriate electrical signal to the distressed heart in an effort to reestablish normal heart electrical signals. Nothing in Nickolls has anything to do with noise. Nickolls is not responding to noise. For Nickolls to respond to noise presumably would result in the wrong signal being applied to the heart of the patient being treated by the apparatus and method of Nickolls. Misidentifying the distress signal would lead to applying the wrong kind of electrical signal to the patient's heart, with potentially fatal consequences.

The differences between the Champagne declaration's microphones inside of a working gas turbine and the present invention are discussed above and are incorporated here by reference. There is no likelihood of obtaining a result that would permit identification of a source of noise ingress into the Champagne declaration's working gas turbine. Nothing in the Champagne declaration discloses or suggests anything having anything to do with noise ingress into a network at all.

The Champagne declaration discloses putting microphones inside a gas turbine, operating the gas turbine and listening for sources of noise. First, it cannot seriously be disputed that the noise the microphones are going to pick up is the noise from the working of the gas turbine. No noise coming from outside the gas turbine is going to have sufficient amplitude inside the gas turbine to be picked up by the microphones.

The present invention provides a method and apparatus to monitor and identify the sources of ingress noise into a network. Ingress noise into a network can be from multiple different and unknown origins, external to the network. These sources include, but are by no means limited to, amateur radio, citizens' band radio, machinery noise, home appliance noise, home computer clock signals, AM radio, and other electrical sources. The application as filed, page 1, line 25-page 2, line 2. A person of ordinary skill in the field of the present invention, such as in the field of community antenna television (CATV), seeking to solve a problem of monitoring and identifying the source of ingress noise into such networks, would not reasonably be expected or motivated to look to apparatus and methods for the identification and treatment of human heart abnormalities, or to methods and apparatus for identifying sources of noise inside working gas turbines.

Again, "[w]e have reminded ourselves and the PTO that it is necessary to consider 'the reality of the circumstances', In re Wood, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979)-in other words, common sense-in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor." In re Oetiker, *supra*. The Federal Circuit's common sense approach precludes Nickolls and the Champagne declaration from being reasonably pertinent or analogous to the present invention. Nickolls and the Champagne declaration are non-analogous to the invention of the present claims. Therefore it would not have been 35 U. S. C. § 103 obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Nickolls or the Champagne declaration or any 35 U. S. C. § 103 obvious combination of them to the identification of ingress noise.

B. But Further, There Is No Disclosure Or Suggestion To Combine, Or How To Combine, Nor Any Expectation Of Success From Any Combination of Nickolls, the Champagne Declaration and Eberhart To Solve the Specific Problem To Which the Present Invention Is Addressed

The PTO has the burden under section 103 to establish a *prima facie* case of obviousness (citing In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984)). Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1138, 227 USPQ 543, 548 (Fed. Cir. 1985).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some disclosure or suggestion, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference

or to combine reference teachings. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). That knowledge cannot come from the applicant's invention itself. In re Oetiker, 977 F.2d at 1447, citing Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 678-79, 7 USPQ2d 1315, 1318 (Fed. Cir. 1988); In re Geiger, 815 F.2d 686, 687, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987); Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1147, 227 USPQ 543, 551 (Fed. Cir. 1985).

Second, there must be a reasonable expectation of success.

Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The disclosure or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Appellant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

> [V]irtually all [inventions] are combinations of old elements. *Environmental Designs, Ltd. v. Union Oil Co.,* 713 F.2d 693, 698, 218 U.S.P.Q. 865, 870 (Fed. Cir. 1983); *see also Richdel, Inc. v. Sunspool Corp.,* 714 F.2d 1573, 1579-80, 219 U.S.P.Q. 8, 12 (Fed.Cir.1983) ("Most, if not all, inventions are combinations and mostly of old elements."). An examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability."

In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998), citing Sensonics, Inc. v. Aerosonic Corp., 81 F.3d 1566, 1570, 38 USPQ.2d 1551, 1554 (Fed. Cir. 1996).

The Examiner conceded that Nickolls does not teach a particle swarm optimizer. The Examiner does not concede this, but neither does the Champagne declaration. The activities alleged in the Champagne declaration predated Eberhart by twenty-seven years. In formulating a rejection under 35 U. S. C. § 103, it is necessary to identify a reason why a person of ordinary skill in the art to which the invention in question pertains would have combined the prior art elements in the manner claimed. In this case, Nickolls knows the signals he is monitoring are coming from the heart. He knows they are of a few discrete types, each having well-established characteristics, each with a feature or features that enable

a clinician to distinguish it from the characteristics of other distressed heart and healthy heart signals.

In the Champagne declaration, General Electric is listening in the extremely noisy environment inside a working gas turbine for a noise signal having a sufficiently large amplitude to destroy the gas turbine, which the noise in question did in a few hours of operation. That noise is not masquerading as something else. It is not hidden. It is powerful enough to tear up a gas turbine in short order. A particle swarm optimizer is not going to be required to identify it.

There is no disclosure or suggestion in any of Nickolls, the Champagne declaration or Eberhart of the desirability of combining their teachings to solve the problem to which the present invention is addressed.

But further, nowhere does any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart disclose or suggest claim 5's specifically recited

> method of *identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress, comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress* together includ[ing] finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress, finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress* includ[ing] teaching a neural network *the frequency spectra of known sources of ingress*, finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress* includ[ing] using a back propagation neural network to find an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*, teaching a neural network *the frequency spectra of known sources of ingress* and using a back propagation neural network to find an optimum solution to *the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress* together includ[ing] using a particle swarm optimizer to find an *optimum solution to the*

> *problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 5 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart. Claim 5 is allowable at least on this basis.

Nowhere does any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart disclose or suggest claim 10's specifically recited

> method of *identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, digitizing the frequency spectrum of the ingress, comparing the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the thus-digitized frequency spectrum of the ingress* together includ[ing] finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*, finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress* includ[ing] teaching a neural network *the frequency spectra of known sources of ingress*, finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress* includ[ing] using a back propagation neural network to find an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*, teaching a neural network *the frequency spectra of known sources of ingress* and using a back propagation neural network to find an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress* together includ[ing] using a particle swarm optimizer to find an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 10 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart. Claim 10 is allowable at least on this basis.

Nowhere does any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart disclose or suggest claim 15's specifically recited

> method of *identifying a source of ingress into a network including storing frequency spectra of known sources of*

> *ingress, digitizing the frequency spectrum of the ingress, comparing the digitized frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress, comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includ[ing] digitizing the frequency spectra of known sources of ingress, comparing the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which of the thus-digitized frequency spectra of known sources of ingress is closest to the thus-digitized frequency spectrum of the ingress* together includ[ing] finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includ[ing] teaching a neural network *the thus-digitized frequency spectra of known sources of ingress,* finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includ[ing] using a back propagation neural network to find an optimum solution to *the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* teaching a neural network *the thus-digitized frequency spectra of known sources of ingress* and using a back propagation neural network to find an optimum solution to *the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress together* includ[ing] using a particle swarm optimizer to find an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 15 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart. Claim 15 is allowable at least on this basis.

Nowhere does any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart disclose or suggest claim 20's specifically recited

> method of *identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining*

from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress, comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress include[ing] digitizing the frequency spectra of known sources of ingress, comparing the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which thus-digitized frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress together includ[ing] finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includ[ing] teaching a neural network *the thus-digitized frequency spectra of known sources of ingress,* finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includ[ing] using a back propagation neural network to find an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* teaching a neural network *the thus-digitized frequency spectra of known sources of ingress* and using a back propagation neural network to find an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress together* includ[ing] using a particle swarm optimizer to find an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 20 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart. Claim 20 is allowable at least on this basis.

Nowhere does any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart disclose or suggest claim 25's specifically recited

[a]pparatus for *identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress,* the device [ ] for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of*

known sources of ingress, the device includ[ing] a neural network, the device teaching the neural network *the frequency spectra of known sources of ingress,* the device includ[ing] a back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress,* the neural network and back propagation neural network together including a particle swarm optimizer for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 25 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart. Claim 25 is allowable at least on this basis.

Nowhere does any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart disclose or suggest claim 30's specifically recited

[a]pparatus for *identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress,* the device [ ] *for digitizing the frequency spectrum of the ingress,* the device [ ] for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress,* the device includ[ing] a neural network, the device teaching the neural network *the frequency spectra of known sources of ingress,* the device includ[ing] a back propagation neural network for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress,* the neural network and back propagation neural network together includ[ing] a particle swarm optimizer for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 30 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart. Claim 30 is allowable at least on this basis.

Nowhere does any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart disclose or suggest claim 35's specifically recited

[a]pparatus for *identifying a source of ingress into a network*

> *including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress, the device [ ] for digitizing the frequency spectrum of the ingress, the device [ ] for digitizing the frequency spectra of known sources of ingress[,]* the memory includ[ing] a memory for *storing the thus-digitized frequency spectra of known sources of ingress,* the device [ ] for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* the device includ[ing] a neural network, the device teaching the neural network *the thus-digitized frequency spectra of known sources of ingress,* the device further includ[ing] a back propagation neural network for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* the neural network and back propagation neural network together includ[ing] a particle swarm optimizer for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 35 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart. Claim 35 is allowable at least on this basis.

Nowhere does any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart disclose or suggest claim 40's specifically recited

> [a]pparatus for *identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress, the device [ ] for digitizing the frequency spectra of known sources of ingress[,] the memory [ ] for storing the thus-digitized frequency spectra of known sources of ingress,* the device [ ] for finding an optimum solution to the problem of *comparison of the stored frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* the device includ[ing] a neural network, the device teaching the neural network *the thus-digitized frequency spectra of known sources of ingress,* a back propagation neural network for finding an optimum solution to the problem of *comparison of the*

> *frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* the neural network and the back propagation neural network together includ[ing] a particle swarm optimizer for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 40 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart. Claim 40 is allowable at least on this basis.

The Examiner did not explain any reason why a skilled artisan, without knowledge of the present invention, would have linked Nickolls, the Champagne declaration and Eberhart as the focus of the 35 U. S. C. § 103 obviousness inquiry, or combined the three in the manner the Examiner has to solve the problem to which the present invention is addressed. The only source linking Nickolls, the Champagne declaration and Eberhart to the present invention is the present application. It is reasonable to infer that the Examiner selected these references with the assistance of hindsight based on Appellant's claims. Courts forbid the use of this kind of hindsight reconstruction in the selection of references to establish 35 U. S. C. § 103 obviousness. In re Rouffet, 149 F.3d at 1358. See In re Gorman, 933 F.2d 982, 986, 18 U.S.P.Q.2d 1885, 1888 (Fed. Cir. 1991). Absent any disclosure or suggestion why the Nickolls/Champagne declaration/Eberhart combination would be made by the ordinarily skilled artisan in the present art, the Examiner did not establish a *prima facie* case of 35 U. S. C. § 103 obviousness.

Accordingly, Appellant submits that the 35 U. S. C. § 103 rejection of dependent claims 5, 10, 15, 20, 25, 30, 35, and 40 based upon Nickolls and Eberhart is erroneous and should be reversed. Such action is respectfully requested.

IV. Summary Conclusions

Nickolls's device for examining heart-generated signals, and comparing those signals to known heart distress signals to identify which kind of distress the heart being monitored is experiencing is non-analogous art to the present invention's identification of the ingress noise from external and unknown sources into networks. The Champagne declaration's analysis of failure modes of a working gas turbine is non-analogous to Nickolls and to the present invention's identification of the ingress noise from external and unknown sources into a network. No 35 U. S. C. § 103 obvious combination of Nickolls and the

Champagne declaration discloses or suggests the specifically recited combinations of elements contained in Appellant's claims. No 35 U. S. C. § 103 obvious combination of Nickolls, the Champagne declaration and Eberhart discloses or suggests the specifically recited combinations of elements contained in Appellant's claims. The rejections of Appellant's claims are erroneous and should be reversed. Such action is respectfully requested.

Respectfully submitted,

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INDS02 RDC 968022

Claims Appendix

The claims on appeal follow:

1. A method of identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress.

2. The method of claim 1 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

3. The method of claim 2 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress.

4. The method of claim 3 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

5. The method of claim 4 wherein teaching a neural network the frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

6. The method of claim 1 further including digitizing the frequency spectrum of the ingress.

7. The method of claim 6 wherein comparing the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the

thus-digitized frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

8. The method of claim 7 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress.

9. The method of claim 8 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

10. The method of claim 9 wherein teaching a neural network the frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

11. The method of claim 6 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress.

12. The method of claim 11 wherein comparing the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which of the thus-digitized frequency spectra of known sources of ingress is closest to the thus-digitized frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

13. The method of claim 12 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress.

14. The method of claim 13 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

15. The method of claim 14 wherein teaching a neural network the thus-digitized frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

16. The method of claim 1 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress.

17. The method of claim 16 wherein comparing the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which thus-digitized frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

18. The method of claim 17 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress.

19. The method of claim 18 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

20. The method of claim 19 wherein teaching a neural network the thus-digitized frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum

of the ingress to the thus-digitized frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

21. Apparatus for identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress.

22. The apparatus of claim 21 wherein the device includes a device for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

23. The apparatus of claim 22 wherein the device includes a neural network, the device teaching the neural network the frequency spectra of known sources of ingress.

24. The apparatus of claim 23 wherein the device includes a back propagation neural network for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

25. The apparatus of claim 24 wherein the device further includes a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress, the neural network and back propagation neural network together including a particle swarm optimizer for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

26. The apparatus of claim 21 wherein the device includes a device for digitizing the frequency spectrum of the ingress.

27. The apparatus of claim 26 wherein the device includes a device for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

28. The apparatus of claim 27 wherein the device includes a neural network, the device teaching the neural network the frequency spectra of known sources of ingress.

29. The apparatus of claim 28 wherein the device includes a back propagation neural network for finding an optimum solution to the problem of comparison of

the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

30. The apparatus of claim 29 wherein the neural network and back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

31. The apparatus of claim 26 wherein the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress.

32. The apparatus of claim 31 wherein the device includes a device for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

33. The apparatus of claim 32 wherein the device includes a neural network, the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress.

34. The apparatus of claim 33 wherein the device further includes a back propagation neural network for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

35. The apparatus of claim 34 wherein the neural network and back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

36. The apparatus of claim 21 wherein the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress.

37. The apparatus of claim 36 wherein the device includes a device for finding an optimum solution to the problem of comparison of the stored frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

38. The apparatus of claim 37 wherein the device includes a neural network, the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress.

39. The apparatus of claim 38 further including a back propagation neural network for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

40. The apparatus of claim 39 wherein the neural network and the back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

Evidence Appendix

No evidence has been submitted in this case pursuant to 37 C. F. R. §§ 1.130-1.132.

Related Proceedings Appendix

There are no copies of decisions rendered by a court or the Board in any proceedings identified pursuant to 37 C. F. R. § 41.37(c)(1)(ii).